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ABSTRACT

One important reason for investigating methods of integrated military and civilian workforce analysis and planning processing in the Navy is to be able to manage the entire workforce. Fundamental differences between the Navy's military and civilian workforce analysis and planning systems are analyzed, discussion centering around the characteristic differences in the workforces, for management of which each system had come to be established. A number of alternatives for integrating these systems is discussed with a particular regard for taking full advantage of the complementary characteristics of each system. Special attention is paid to the interrelationships of the manpower requirements generating and personnel inventory analysis systems for the Naval shore establishment where military and civilian personnel work together. Some suggestions for long range research and development are made pointing to areas in which optimal systems design can be pursued. (Author/JT)

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OCMM RESEARCH REPORT NO. 28

INTEGRATED MILITARY-CIVILIAN WORKFORCE ANALYSIS AND PLANNING

by

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INTRODUCTION

One important reason for investigating methods of integrated military and civilian workforce analysis and planning processes is to be able to manage the entire workforce, since military and civilian personnel work side-by-side ashore, often doing very close to the same jobs, yet have been planned, programmed, budgetted and allocated under separate systems. Another reason for investigating integrated military and civilian workforce analysis and planning processes stems from the desire to identify and analyze possible tradeoffs between the two different sorts of personnel. Civilianizing formerly military positions and vice versa are policies that are extremely complex to implement without adequate information. The simple observation that these policies are directly antagonistic in their goals leads to a host of attendant issues. The goal of establishing equitable shore duty for highly skilled and specialized military personnel and the conflicting awareness of life-cycle cost efficiencies available through utilizing civilian personnel wherever possible have resulted in issues that can be resolved only in a well-designed and effectively coordinated manner.1/

It is interesting to note that, although methods have been devised at the field level to collect and report information pertaining to military-civilian either-or spaces, this information is not systematically reported through the chain of command to headquarters. The Navy is not taking advantage of the degree of flexibility in workforce analysis and planning

1/ See [4] for an earlier discussion of these issues by VADM D. H. Bagley.

that this information would provide. There exists no incentive for the field or line-manager to report such information. Furthermore, the extension of such a system-input capability throughout the field would require the full cooperation of military and civil service classifiers.

There is a desire on the part of the Navy to develop a standards/requirements based planning system. Such a system would provide accurate and appropriate information with which to defend budget requests during budget hearings. This information would establish minimum manpower requirements for mission accomplishment. To prepare such information, the planning and programming phases of the PPBS must be addressed to the task of integrated workforce analysis and planning within a standards/requirements driven system that is responsive to workforce capabilities. The desire that the Navy move toward a standards/requirements driven and more fully integrated workforce analysis and planning system has been expressed as a concern of the Senate.

> "Navy manpower and personnel management appears fragmented. This could compound the Navy's personnel planning and management problems...
>
> "Because of the importance of manpower to the readiness and effectiveness of the forces, the longer lead time and greater investment needed to produce trained men for technical jobs in the Navy, and the rising cost of manpower, more integration of manpower planning and management is needed than in the past. The Navy should take a longer range view of total fleet manning to achieve readiness and operating objectives than is now apparent. The [Senate Armed Services] Committee therefore requests the Secretary of the Navy and the Chief of Naval Operations to evaluate the Navy's organizational arrangements and procedures relating to manpower and personnel and report to the committee on the results of the evaluations and steps taken to improve the integration of the planning, development of requirements, training, allocation, and assignment of military, civilian and reserve manpower."[20]

The Armed Services Conferees Report for the fiscal 1977 budget, further mentioned its desire that the Navy accelerate its attempts to "improve the

definition of shore requirements and standards, and to establish an adequate manpower planning system."[2/]

The concerns that have been expressed by the Congress are certainly related to the role it plays as allocator and distributor of scarce resources to and among those organizations that wish to lay claim to them. Since the Air Force and the Army present their budget requests within the framework of a workforce analysis and planning system driven by standards/requirements, it is not inappropriate that the Congress, OSD, and OMB would suggest that the Navy follow suit. When the presentations at budget hearings by the different branches of the Armed Services can be induced into comparable structures, then cross comparisons can be more easily achieved.

Of late, the Navy has paid particular attention to the manner in which the Air Force has achieved a standards/requirements driven workforce analysis and planning system. The Air Force has achieved such a system by completely separating its standards/requirements generating function from the other functions involved in a fully integrated and interactive workforce analysis and planning system. The organizational entity responsible for the standards/requirements generating function in the Air Force is the Air Staff Directorate of Manpower and Organization.

The Director of Manpower and Organization formulates and establishes overall manpower policies and directs and supervises the establishment of standards and development of requirements. It is the air base attached staff within the Directorate that develops and applies manpower standards in the first stage of developing total Air Force requirements. The efforts

[2/] See [3] for the Assistant Secretary of the Navy (Manpower and Reserve Affairs) memoranda on the Senate Armed Services Committee requirement for evaluation.

of the air base staffs and the guidance and oversight of the Director are articulated through the major air command level Manpower and Organization staff. The system is well coordinated and quite effective at generating the standards/requirements information necessary to drive the workforce analysis and planning process.

A parallel sort of system could very possibly provide the Navy with the standards/requirements driving function that it seeks for its workforce analysis and planning system. But the total Navy organization has developed over centuries, while the existence of the Air Force is still measured in decades. The Air Force was organized in an era of industrial-organization influence toward centralization. The Navy was not. There is also a significant difference between the types and number of employees found in the Air Force and Navy workforces. The Navy's industrial functions are more often performed in-house rather than by contracting out.

For the Navy to develop a parallel structure for standards/requirements generation would cost it the [illegible]il of drastically altering its organizational structure. This is especially true on the civilian side where decentralization and line-management/headquarters interaction has been the basic method whereby the system has functioned. It would also cost the separation of the standards/requirements driving force from the other aspects of workforce analysis and planning.

In this regard, from a national perspective, the United States Civil Service Commission has recently established an Interagency Advisory Group (IAG) Committee on Workforce Analysis and Planning. In part "the Committee will work toward linking the workforce analysis and planning capability of the agency personnel function to the agency responsibilities for mission

planning and budgetary formulation."[22] The Navy's concern for integrating the military and civilian workforce analysis and planning systems should further include the concern for improving interaction and coordination between workforce analysis, mission planning and budgetary concerns.

The Air Force system is not a new system. Computer technology has advanced quite dramatically since the conception of the system. Just because a system works does not necessarily indicate that it is the best system available. An integrated and interactive workforce analysis and planning system that is standards/requirements driven is well within the grasp of the Navy. It would also be much more cost-effective than a system designed to parallel that of the Air Force. The Directorate of Manpower and Organization alone costs the Air Force a minimum of 2,500 man-years to staff. Though fragmented in terms of its standards/requirements driving capabilities, the Navy has performed the parallel function with man-year costs running in the low to mid hundreds, and with comparable success as measured by the ratio of appropriations received to budgets requested. Furthermore, an integrated and interactive system could provide on-site as well as aggregate level information in a manner that would more fully utilize rather than override the important contributions that activity and major claimant level management can contribute to workforce analysis and planning. This would be possible while still producing the aggregate level information that the Air Force Directorate of Manpower and Organization provides. Integration and centralization are not the same thing.

What will be addressed in this paper are the ways in which current workforce analysis and planning systems can be utilized to establish an integrated

and appropriate system within the Navy Manpower Planning System (NAMPS).[3/] The first subject addressed in this paper will be the fundamental differences between the Navy's military and civilian workforce analysis and planning systems. The discussion will center around the characteristic differences in the workforces, for management of which each system had come to be established. Then, a number of alternatives for integrating these systems will be discussed with a particular regard for taking full advantage of the complementary characteristics of each system. Special attention will be paid to the interrelationship of the manpower requirements generating and personnel inventory analysis systems for the Naval shore establishment where military and civilian personnel work together. A further objective is to present some suggestions for long range research and development, so as to point to areas in which optimal systems design can be pursued.

Many of the concerns expressed in this paper are already being reviewed by the highest levels within the Navy. On 26 August 1976, the Chief of Naval Operations released a message [11] which announced approval of the first phase of a plan to consolidate the military/civilian manpower planning and programming functions in the Office of the Deputy Chief of Naval Operations (Manpower). During this phase the Director Navy Program Planning will continue to monitor all manpower requirements during the program development phase, and retain full responsibility for civilian personnel budgeting, allocation, and control to the major command level. This is a significant step forward as it is a formal endorsement of the information structure necessary to develop an integrated military/civilian workforce analysis and planning system.

[3/] See [13] for a description of NAMPS.

MAJOR DIFFERENCES BETWEEN THE NAVY'S MILITARY AND CIVILIAN MANPOWER SYSTEMS

Workforce analysis and planning in the Navy has been fragmented. Though the Navy workforce consists of officer, enlisted and reserve military, contract, and civilian personnel, the most fundamental differences occur between the military and civilian workforce analysis and planning processes. Essentially, two different manpower systems exist.

The two systems have obtained important background and policy input from the same source which is overall guidance derived from general guidance memoranda for strategic and force level planning.

The differences that exist between the two formerly established methods of workforce analysis and planning do not escape all logic. There are a number of good reasons for the two systems to have developed in the manners in which they did. The two systems have developed in accord with the two different labor markets, including both the internal labor supplies and the extension of these labor pools into the external labor pools that are tapped in the process of filling positions. It is most likely that these labor markets will change very little in the foreseeable future.

The military system deals with a labor market that is characterized by a high degree of central control over promotion, assignment, and all other personnel actions. The labor market has fixed boundaries (military personnel) and a limited number of entry points except in dire emergencies. For this reason most experienced personnel must be "grown" from within this limited, but very large, labor pool. The Navy policy of rotation of duty results in a high degree of job/person instability. Almost all military personnel in the Navy will change jobs within four years. The Navy must recruit by competition with an external labor market. It cannot obtain military personnel

by conscription. And the Navy is responsible to the United States Congress for requirements specifications and control, by authority, over funds for personnel. The manpower requirements and specifications prepared for the Congress have been derived independently of the existing personnel pool and with no consideration for the restrictions imposed by the need to grow experienced military personnel.[21] Currently, requirements and specifications are constrained, beyond the policy level in regard to personnel inventory capabilities, through the efforts of the Manpower Resource Coordination Panel (MRCP).

The civilian system deals with a labor market that is characterized by an increasing degree of central control over promotion and organizational structure. This is due in part to an increasing concern with inflating personnel costs, overall grade enrichment, and high grades. Basically, though, the civilian system is managed in a decentralized manner with some control imposed in the form of policy guidelines, aggregate (non-qualitative except for limits on high grades) total numbers allotment, and approval/disapproval mechanisms. There is no central control comparable to that in the military system over assignment of individual personnel. Such control is specifically limited by Civil Service Commission Laws and Regulations. There is no functional aggregate requirements development. The civilian system deals more often with career type, instead of rotational type, personnel placement. There is, therefore, less turbulence within the labor pool. The civilian system may recruit at any level. The labor market is thus much less constrained to produce or grow experienced personnel from within its own personnel inventory. The civilian system must of course compete with an external labor market for recruitment, as does the military,

but the base from which it may recruit is much broader. The constraints of age and physical condition are much less rigorously applied. The Navy civilian system simply competes as part of the entire civil service structure. Another difference between the military and civilian systems is that the civilian system can employ temporary personnel. This occurs most frequently in NIF (Naval Industrial Fund) related activities such as Naval Air Rework Facilities (NARF's) and shipyards and in research related activities. Although the military can utilize reserve personnel in a temporary fashion to obtain a degree of flexibility, this cannot normally be done except in the case of an emergency situation. This freedom available to the civilian system, in conjunction with a one day a year accounting for ceiling constraint, leads to a more flexible boundary or limit to the magnitude of the civilian workforce employed by the Navy.

Another concern in the management of civilian employees is the existence of labor unions. Most union contracts specifically forbid or limit the use of military personnel to perform jobs which have been unionized. Thus, large blocks of civilian positions are not structured to permit substitution by military billets. In any event, it is clear that military/civilian substitutions must be occupationally based.

The military system, due to the peculiarities of its labor market, is very correctly referred to as a closed system. It must consider its workforce capabilities from within the limits of its established labor pool, especially for the short-run. The civilian system on the other hand is much more flexible both in its total numbers or magnitude and in its interface with a prospective recruitment base. It is much more correctly referred to as an open system, since it can anticipate its workforce capabilities in

relation not only to its inventory, but also to the national/international labor pool in general. It is much more directly limited in its capabilities by budgetary considerations.

It is important to emphasize that the military system is to some extent compensated for its lack of flexibility by a high degree of certainty and control over its labor pool. This creates a trade-off of size and recruitment flexibility against control over personnel assignment and length of service that make mobilization and quick response possible. The capability of mobilizing quickly is currently regarded as necessary for an armed service to perform its primary function.

Since defense is the primary function of an armed service, and defense at sea is the primary function of the Navy, it is quite understandable that Navy policy would regard mobilizable military personnel in a manner quite different from its civilian personnel. By controlling the military manpower funding through an individual appropriation, Military Pay Navy (MPN), and by linking the civilian personnel to the other appropriations, Operations and Maintenance Navy (O&MN), Research, Development, Training and Education (RDT&E), etc., the Navy expresses a regard for civilian personnel as equivalent, within certain constraints, to other resources which may be utilized in a support capacity. This has led to complex budget/ceiling management coordination needs and results in a high degree of multi-level management interaction in the civilian system.

Military personnel is the first priority manpower concern of the Navy. Management of the military workforce operates within a tightly constrained, qualitatively fine-tuned, and highly controlled environment. The result is that a standards/requirements based military manpower plan forms the skeleton

of the total Navy workforce analysis and planning system. The skeleton must first be framed by the existing military personnel inventory and, then completed in a supportive fashion by the civilian workforce.

When one considers the differences between the military and civilian labor markets and the manner in which the Navy views these two labor forces, then one concludes that, separately, the two workforce analysis and planning systems that have been established to manage them are reasonable in terms of basic design.

The standards/requirements driven, billet-centered, and highly centralized system that has developed for management of the military workforce is just the kind of system that is necessary when control over personnel assignment and limited entry into the workforce coincide. It is necessary to assign the workforce that is available within the guidelines of what is required to perform desired functions. It is, furthermore, very important that this be done first so that the civilian workforce can be shaped to support the military in the best manner possible. The support needs of the military should be an initial input into the civilian workforce analysis and planning system. It is in the articulation of this concern that integration of military and civilian workforce analysis and planning should place its primary concern.

The aggregate ceiling controlled, decentralized system that has developed for managing the civilian workforce provides the kind of system that operates best in conjunction with the expertise of multiple-level management for implementing hiring, firing, and temporary employee mechanisms. These are the mechanisms that are available to adjust the size and distribution of the workforce so as to meet the support function requirements performed by civilian personnel in a cost-effective manner.

A qualitatively fine-tuned standards/requirements driving capability cannot be adequately established without close coordination with civil service classifiers. Classifiers are responsible by law for establishing the grade and level associated with a particular position. Unlike the standards/requirements capability associated with the SMDs (Ship Manning Documents) and SQMDs (Squadron Manning Documents) for the military personnel attached to ships and squadrons, the civilian system has depended on decentralized standards/requirements generation. These standards/requirements are much more readily applicable to incremental/decremental adjustments than to the fine-tuned zero-based applications associated with ships and squadrons. They also often lead to more reasonable estimates of attainable workforce size and structure, expecially for Navy Industrial Fund (NIF) activities, since labor union and thus Congressional concerns are negotiated in an incremental/decremental fashion. For functions where a standards/requirements capability has been adequately established, it seems reasonable to utilize established systems when possible in developing such capability for shore related functions.

SOME ALTERNATIVES FOR INTEGRATING THE TWO SYSTEMS

There are a number of alternative methods for improving the interaction and coordination between the military and civilian workforce analysis and planning systems. One possibility, of course, would be to leave the systems as they are, but develop an information transfer mechanism between the headquarter's level military and civilian manpower management staffs. Presumably, this would allow the two systems' staffs to proceed with business as usual, yet with improved knowledge of what each is doing. Decisions made by one staff that would have an impact on decisions being made by the other would be made known in a more systematic and timely manner. Still, this alternative would not answer to the problem of justification of budgetary requests based upon standards/requirements. Another possibility would be to combine the military and civilian manpower management functions, change the civilian system so as to bring it into parallel with the military system, and develop a single joint military and civilian standards/requirements driven data-base for manpower management. This alternative would not utilize, in the best manner, the expertise and knowledge available at multiple levels of management.

There is another possibility that would more directly respond to the Civil Service Commission's 1976 Interagency Advisory Group (IAG) Personnel Directors' Conference recommendations in the area of workforce planning and forecasting. The recommendations reflected a concern that agencies recognize that "the close relationship that must exist between workforce planning and the organization's long-range goals and plans is critical to the establishment of an effective workforce planning program. In fact, the long-range plans and the goals of the organization must provide the direction and

establish the basepoint from which workforce planning is initiated. Unless this is assured, workforce planning will end up as an 'ivory tower' exercise which line managers will consider a useless frill."[23]

Workforce planning is a concern which extends beyond individual agencies. With this in mind, the 1976 IAG Personnel Directors' Conference on workforce planning and forecasting requested that agencies "make available for Government-wide planning purposes the results of their workforce planning efforts so this data can be combined with private sector requirements to establish national needs for critical skills, advising the public on occupations offering the greatest immediate opportunity, planning programs for the disadvantaged and encouraging students to pursue careers in shortage category areas."[23]

This third possibility would not only create the headquarters level management capabilities that a parallel system could make possible, but would less drastically change the established methods of performing workforce analysis and planning. It would also more fully relate the dual aspects of the long-range planning and the workforce analysis and planning functions. This type of system would entail the implementation of an interactive system which would remain responsive to claimant-level and local management needs while providing appropriate information and analytic capabilities to headquarters-level management.

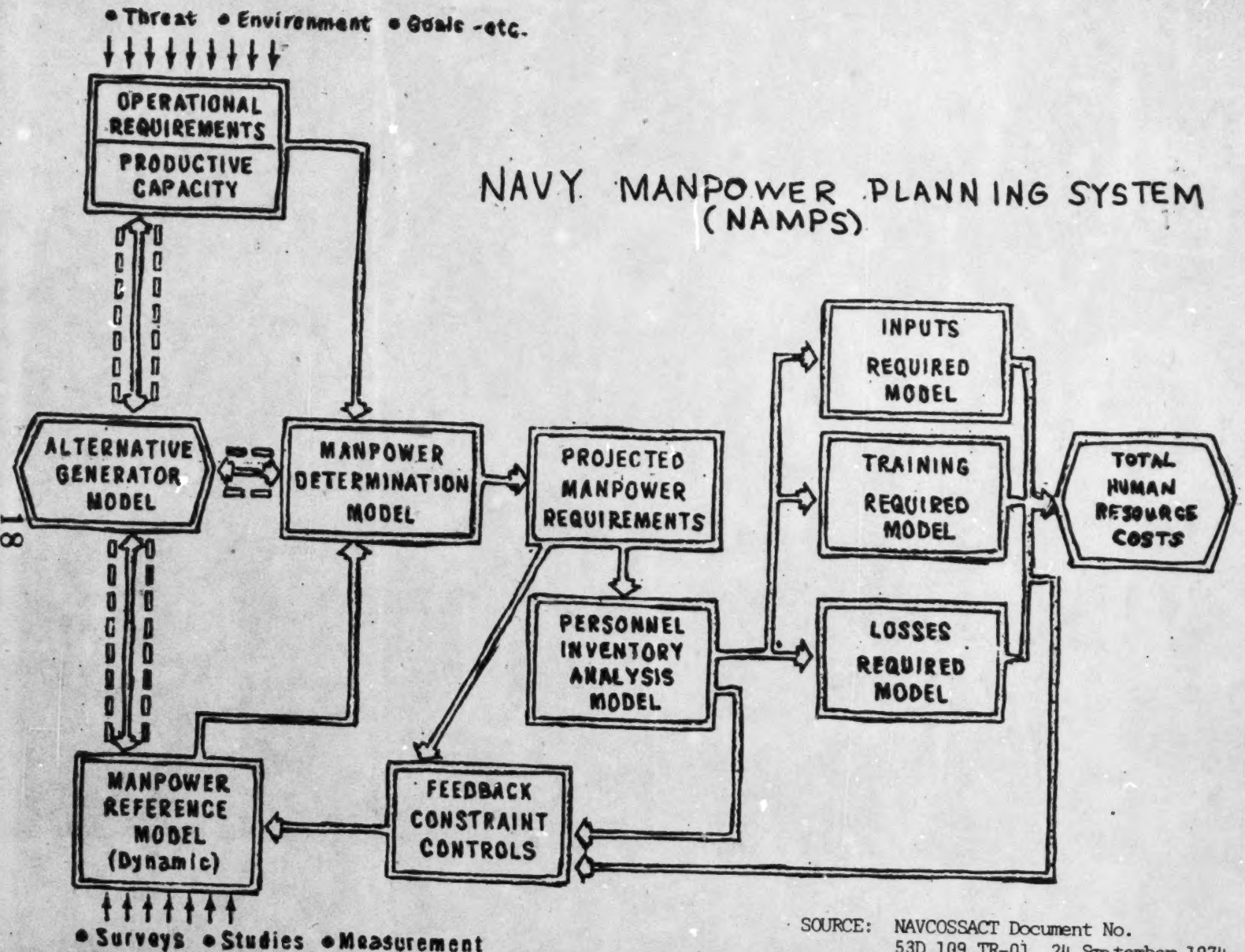
For such a system to be well-designed and coordinated it should link together a number of capabilities which currently exist so as to establish an improved system with the least amount of disruption. It should build on the currently established military workforce analysis and planning system. Such considerations would fit within the framework of the Navy Manpower Planning

System (NAMPS). A diagrammatic conceptualization of the NAMPS appears in Figure 1.

NAMPS intends "to provide integration of several heterogeneous components so that the functions of resource management, manpower planning, and personnel management are linked together with 'feedback' mechanisms that will optimize Navy decision-making.... The NAMPS philosophy contends that 'the impact of a decision in one field (e.g., manpower planning) must be readily identified and made known to the other two fields so that the true long-term impact on cost effectiveness can be determined...'"[13]

The driving force for the NAMPS is the Navy Manpower Reference Model. This model includes the Ship Manpower Documents (SMDs) and the Squadron Manpower Documents (SQMDs). It is planned to add the basic integrating factor of a shore-related requirements generating system such as the Shore Required Operational Capabilities (SHOROC) makes possible. This could be accomplished through combining many of the already existent locally developed requirements generating systems and filling in the gaps and replacing these in a phased manner by the Shore Requirements, Standards and Manpower Planning System's (SHORSTAMPS) functional area modules as they are completed and approved.

As described in [18], "SHORSTAMPS is an application of proven industrial and management engineering principles to the responsibility of the Chief of Naval Operations for determining the total military and civilian manpower requirements for the Navy shore establishment. SHORSTAMPS is comprised of the SHOROC subsystem of standard tasking phases, and the Navy Staffing Standards subsystem linked by a common terminology. The synthesis of these elements is a significant improvement in requirements determination and resource management ashore, achieved by forging a positive linkage between



SOURCE: NAVCOSSACT Document No. 53D 109 TR-01, 24 September 1974

Figure 1

operational capability and the resultant manpower requirements." See Figure 2 for a diagrammatic representation of the SHORSTAMPS concept.

The objective of SHORSTAMPS is to provide the capability of generating Shore Manpower Documents (SHMDs) which will specify manpower resources necessary to perform approved tasks. The SHMDs are to take their place in NAMPS along side the SMDs and SQMDs. An additional benefit of the SHORSTAMPS is the facilitation of Navy-wide functional comparisons. It should prove quite beneficial in those areas of the shore establishment that are most closely linked to the fleets and squadrons, such as Naval bases and air stations. "The SHORSTAMPS program does not envision the redevelopment of staffing standards which are available from other services and agencies which were developed using industrial engineering techniques. This policy is specifically important when addressing the Naval Industrial Funded (NIF) activities."[18]

The ADP support for linking the Manpower Reference model to Operational Requirements and Productive Capacity as shown in Figure 1 will come from the Navy Manpower Requirements System (NMRS). The objectives of the NMRS as discussed in [13] are to:

a. Develop a standardized manpower document

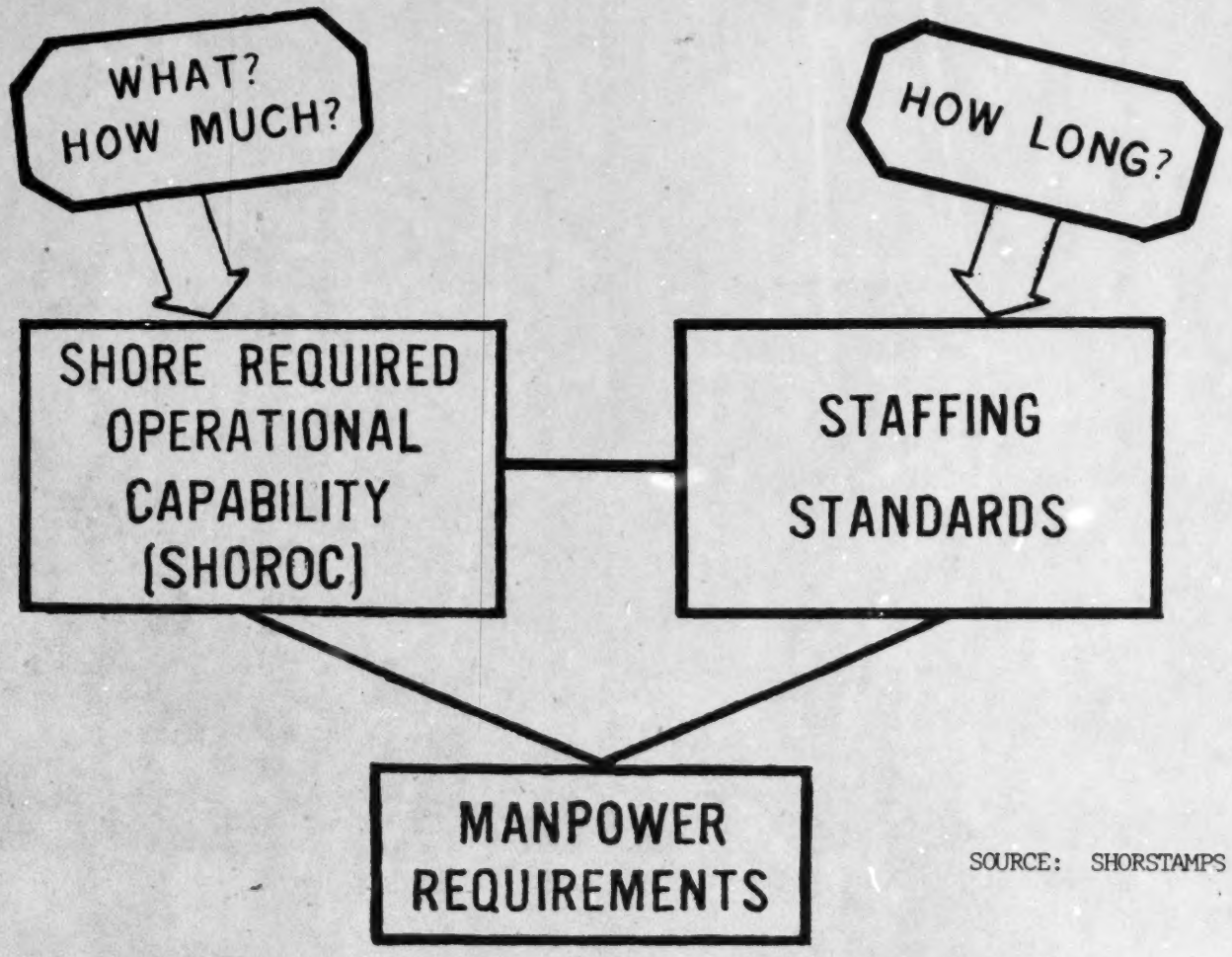
b. Automate development of manpower requirements

c. Document aggregate manpower requirements, and

d. Allow for managerial utilization of this information.

The system as it has been described up to this point runs in parallel with the military workforce analysis and planning system as established and foreseen. The pivotal data file for integration of the military and civilian workforce analysis and planning systems is a requirements generated Civilian Manpower Allocation/Requirements Plan (C-MARP) to parallel the military

SHORSTAMPS CONCEPT



SOURCE: SHORSTAMPS BRIEFING CHART

Figure 2

equivalents of the Peacetime and Mobilization Manpower Allocation/Requirements Plan (P-MARP and M-MARP). The vital information contained in the C-MARP is to be the display of aggregate requirements and would provide a reference point for further workforce analysis and planning within the Projected Manpower Requirements module of the NAMPS. As discussed in [11], the requirement for the development of a C-MARP has been implemented by the Chief of Naval Operations.

Within NAMPS, the personnel management modules include the Personnel Inventory Analysis Model, the Inputs Required Model, the Training Required Model, and the Losses Required Model. As discussed in [13], "... the current NAMPS concept postulates the use of personnel management models currently existing or under development in BUPERS (for officer and enlisted personnel) or in OCMM (for civilian personnel)."

At the present time the Navy has developed, in operational or operational prototypes, the necessary subsystems and models to complete an enlisted force management system. It is called the Advancement, Strength, and Training Planning Program (ADSTAP). The integration of this ADSTAP operational management system with the projected manpower requirements module of NAMPS is well on its way to being a completed fact. The civilian systems are in a more fundamental development status. Thus, the remainder of this section of this report will concentrate on the civilian systems. However, for sake of completeness the details of the military systems are given in Appendix II.

As for the systems integration on the civilian side, the aggregate requirements displayed in the C-MARP could be utilized by the requirements driven Shore Activity Manpower Planning Systems (SAMPS) under development by OCMM to provide multi-level management decision making tools as well as inte-

grated military and civilian workforce analysis and planning capabilities [5], [9], [10], [16]. Modern computer technology makes it possible to have a combination or central system for aggregate controls that is directly linked to local manpower planning systems such as those that are currently operating at the Naval Air Rework Facility (NARF) at North Island [5] and the Naval Underwater Systems Center (NUSC) at Newport [10]. This would allow detailed data to be accessed at the field level where it is most useful for civilian-related workforce analysis and planning while continuing to provide an aggregation of this data at the central level to be used for integrated military and civilian workforce analysis and planning. It would also satisfy the need for planning equal employment opportunities (EEO). Preliminary operational forms of the equal employment opportunities planning model are already being used to assist in establishing the Navy's National Affirmative Action program. The headquarters part of the SAMPS is designed to ensure standardization and maintain some central control, while minimizing the use of central staff resources in servicing the field use of the manpower models [16].

The SAMPS dynamic civilian manpower planning models utilize goal programming to try to meet as closely as possible a set of often conflicting manpower requirements for a number of periods in the future. The analysis is carried out through consideration of various priorities and penalties for moving away from the goal or requirements. A number of constraints are also set within which the requirements must be met. These constraints may include: manpower already on-board; attrition, including retirements and internal transfers between job categories; total manpower controls; and total salary budgets. The more extensive forms of the models

include multi-level features to incorporation program planning directly in the models.

The Computer-Assisted Manpower Analyses System (CAMAS), which is designed for special manpower studies, is being modified to provide the computer support necessary to run the headquarters-level SAMPS.[12] SAMPS is currently being used as a computer support system for advanced development research.

The SAMPS subsystem which would be accessible by field installations via the data communications network can run various combinations of models, with a minimum version restricted to evaluation of local manpower dynamics constrained by manpower ceilings. The projected transition matrices can be modified if desired. Gross manpower requirements can be entered into the model via the activity related C-MARP. The activity can alternatively obtain these data from a workload projection system applicable to the type of installation involved. SAMPS is thus capable of accepting requirements information from the best source available. The solution of the model results in a projected skill distribution in relationship to the manpower requirements.

Concern with systems compatability has led to an examination of the relationship between SAMPS and the Shore Requirements, Standards and Manpower Planning System (SHORSTAMPS). SHORSTAMPS is primarily concerned with the development of civilian and military manpower requirements for the Navy shore establishments. SAMPS on the other hand is aimed, at the evaluation of such requirements in relationship to the dynamics of the workforce. The most important consideration to ensure the correspondence between SAMPS and SHORSTAMPS is consistent coding systems and methodologies to transmit

requirements data from one system to the other. The C-MARP should provide this transmission.

The underlying objective of SAMPS is the minimization of the difference between (a) organizational goals, (b) current manpower trends, and (c) employee aspirations. This would involve the balancing of workload and policy planning at the aggregate level with individual assignments at the man-job level. See Figure 3 for a diagrammatic representation of the system's interrelationships.

One of the additional benefits of this system would be an interactive design that could rapidly respond to POM related decisions. As described in [13], "one of the major problems currently facing manpower planners is the inability to assess manpower data produced by the Navy Resource Model (NARM) rapidly enough to determine what reclama action, if any, might be appropriate...

"While the process of identifying activities associated with the program elements referred to by NARM presents no problem, and while the determination of differences between MARP and NARM data at the program element level also presents no problem, the determination of how to 'spread' program element differences among activities is another matter. The ideal solution, from the user's point of view would be interactive processing of a 'work file', allowing the application of human judgment through the man-machine interface to create a file of 'net changes' by activity." SAMPS provides this sort of a management decision-making tool. It does not, though, make decisions, but simply allows managers the capability of rapidly obtaining information processing and analytic assistance.

SAMPS would also address the question of reconciliation of personnel supplies and manpower demands, in a manner similar to the Enlisted Force

DYNAMIC ACTIVITY MANPOWER MODELING SYSTEM

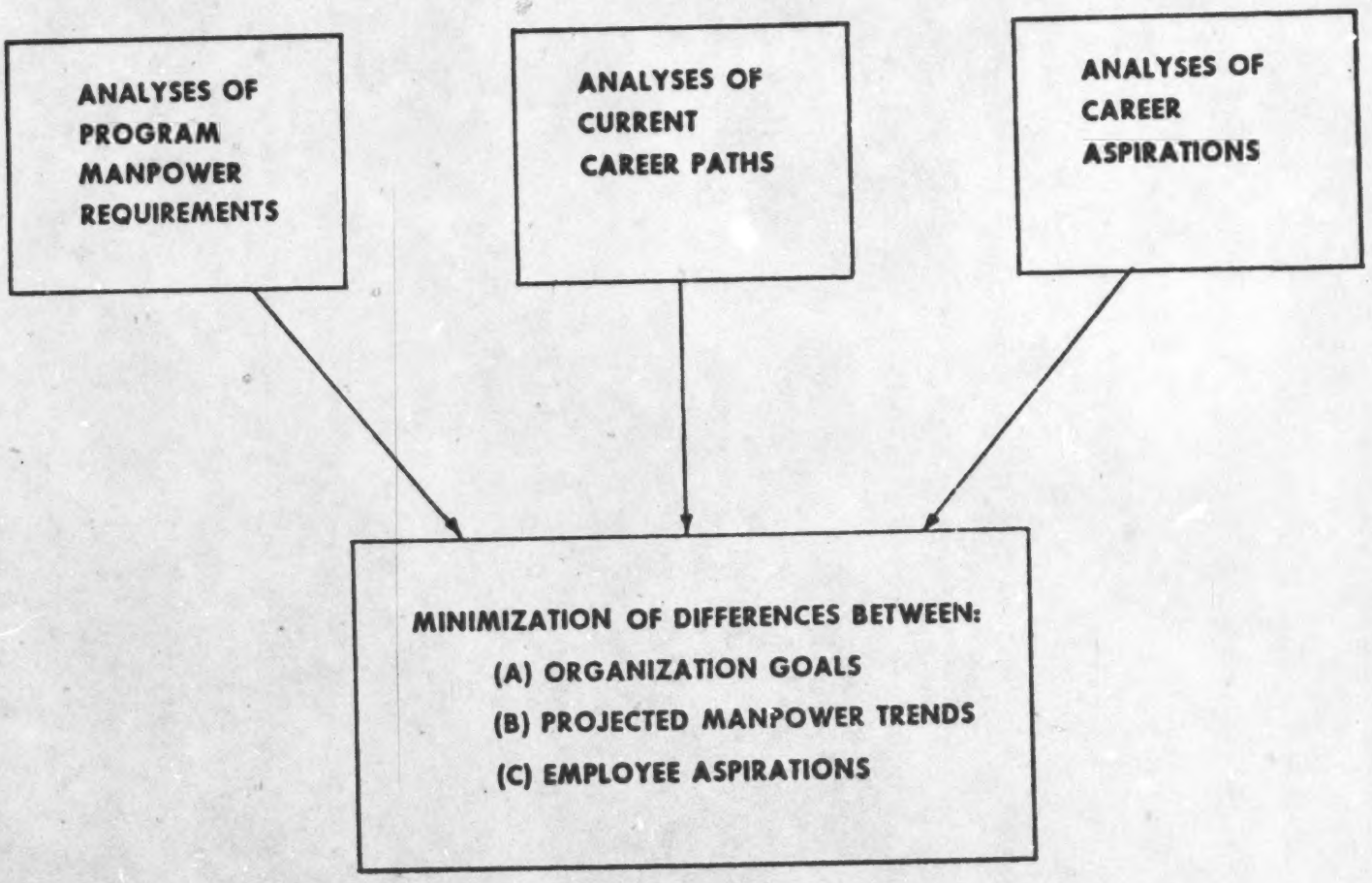

ANALYSES OF PROGRAM MANPOWER REQUIREMENTS
ANALYSES OF CURRENT CAREER PATHS
ANALYSES OF CAREER ASPIRATIONS
MINIMIZATION OF DIFFERENCES BETWEEN:
(A) ORGANIZATION GOALS
(B) PROJECTED MANPOWER TRENDS
(C) EMPLOYEE ASPIRATIONS

Figure 3

Management System, as illustrated in Figure 4. Within the framework of the total NAMPS system, SAMPS would condense a number of the modeling capabilities as displayed in the NAMPS design in Figure 1. The results of this condensation will produce a full cycle of analysis within the NAMPS. For the civilian-related concerns of the NAMPS, the SAMPS would appear as in Figure 5.

Figure 6 shows an expanded system's display of the SAMPS module within the framework of the NAMPS. SAMPS would perform personnel inventory analysis, inputs required, losses required, and alternative generator modeling capabilities within a structure that is responsive to constraints, controls and feedback. It would do this in such a manner as to provide a vital point of information transfer between the process of requirements generation and the allocation function. In later versions of SAMPS, the training required model in Figure 5 would also be condensed into a single integrated goal programming model.

Advanced start studies [7], [8], [15] and the use of modern linear programming codes have reduced solution time to 2-3 minutes for large problems and 8-15 seconds for smaller problems. These studies indicate that the solution of the linear programs for the size of problems to be expected at shore installations is within the realm of the conversational on-line use of the model at a relatively small cost ($10-$15 per model alternative). Thus, there exists with SAMPS the linked benefits of quick response and low expense. This should prove most beneficial as a tool to assist in the preparation of reclamas to program budget decisions (PBDs). The turnaround time frame for reclamas is on the order of 24 hours.

As was mentioned earlier, SAMPS is currently functioning as large scale research studies at the activity level at NARF, North Island and at NUSC,

PERSONNEL SUPPLIES AND MANPOWER DEMANDS

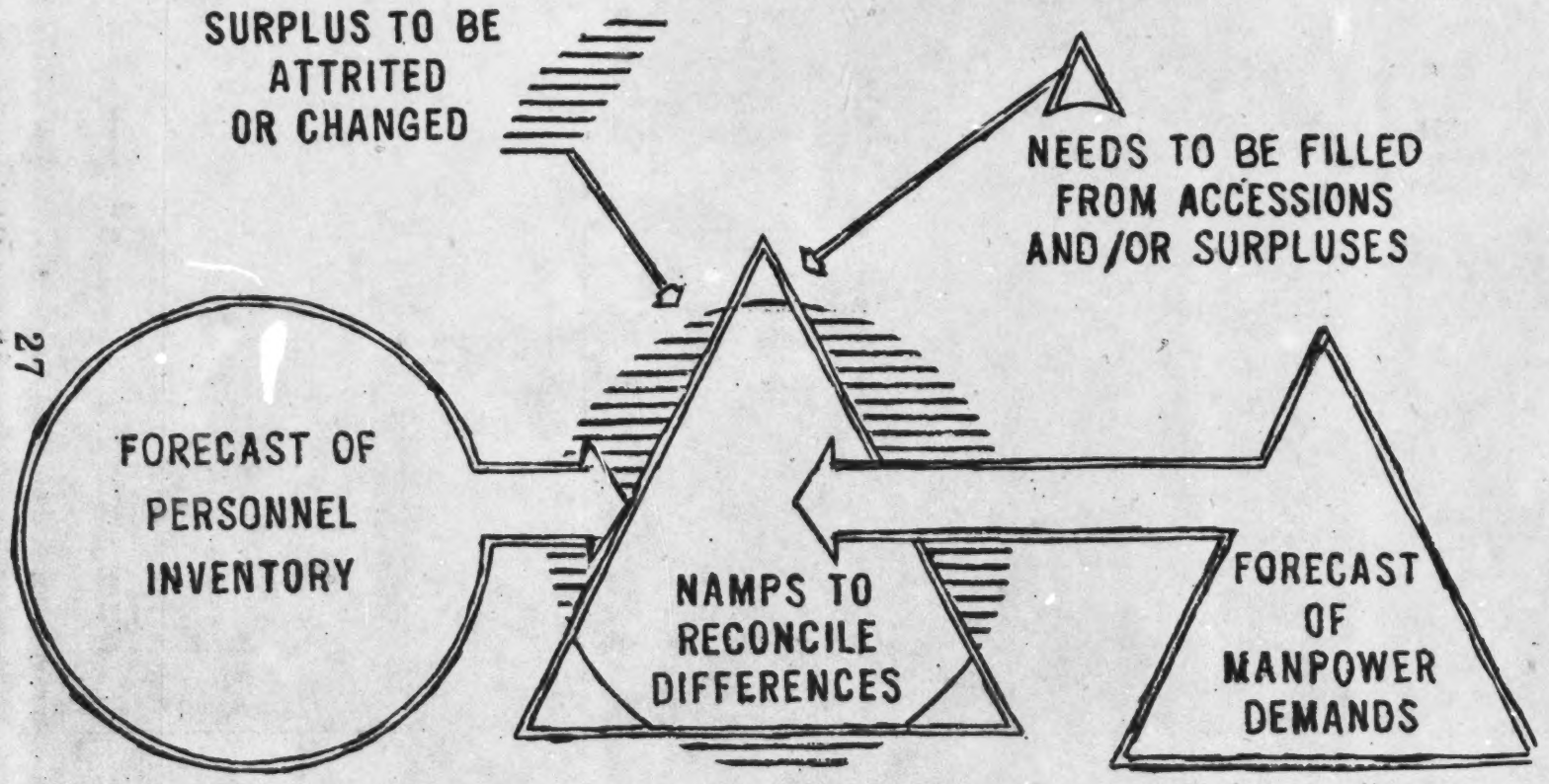

SURPLUS TO BE ATTRITED OR CHANGED
NEEDS TO BE FILLED FROM ACCESSIONS AND/OR SURPLUSES
FORECAST OF PERSONNEL INVENTORY
NAMPS TO RECONCILE DIFFERENCES
FORECAST OF MANPOWER DEMANDS

Figure 4

SOURCE: NAMPS BRIEFING CHART

AGGREGATE CIVILIAN MANPOWER MANAGEMENT MODEL

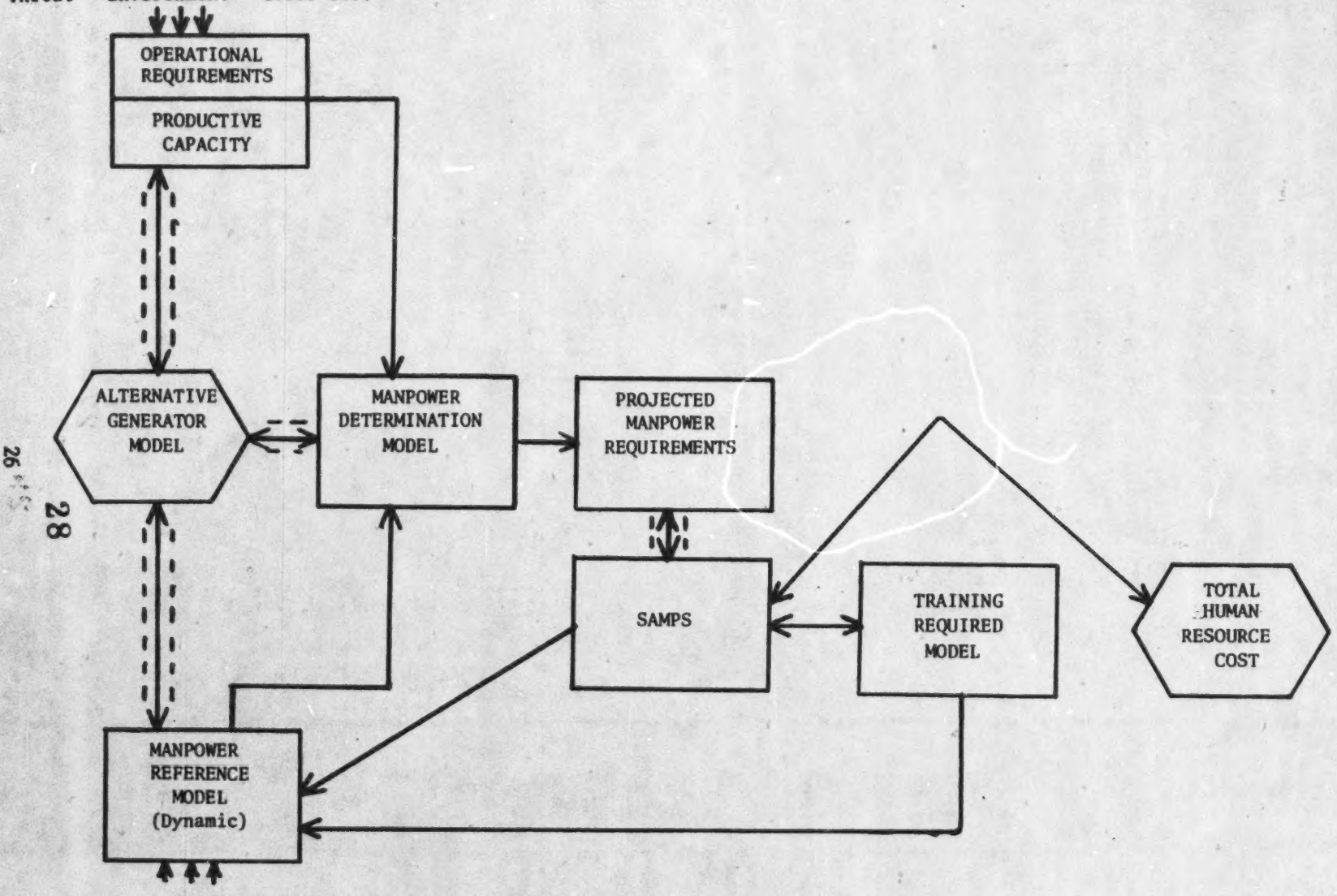


Figure 5

CIVILIAN FORCE MANAGEMENT SYSTEM - SAMPS

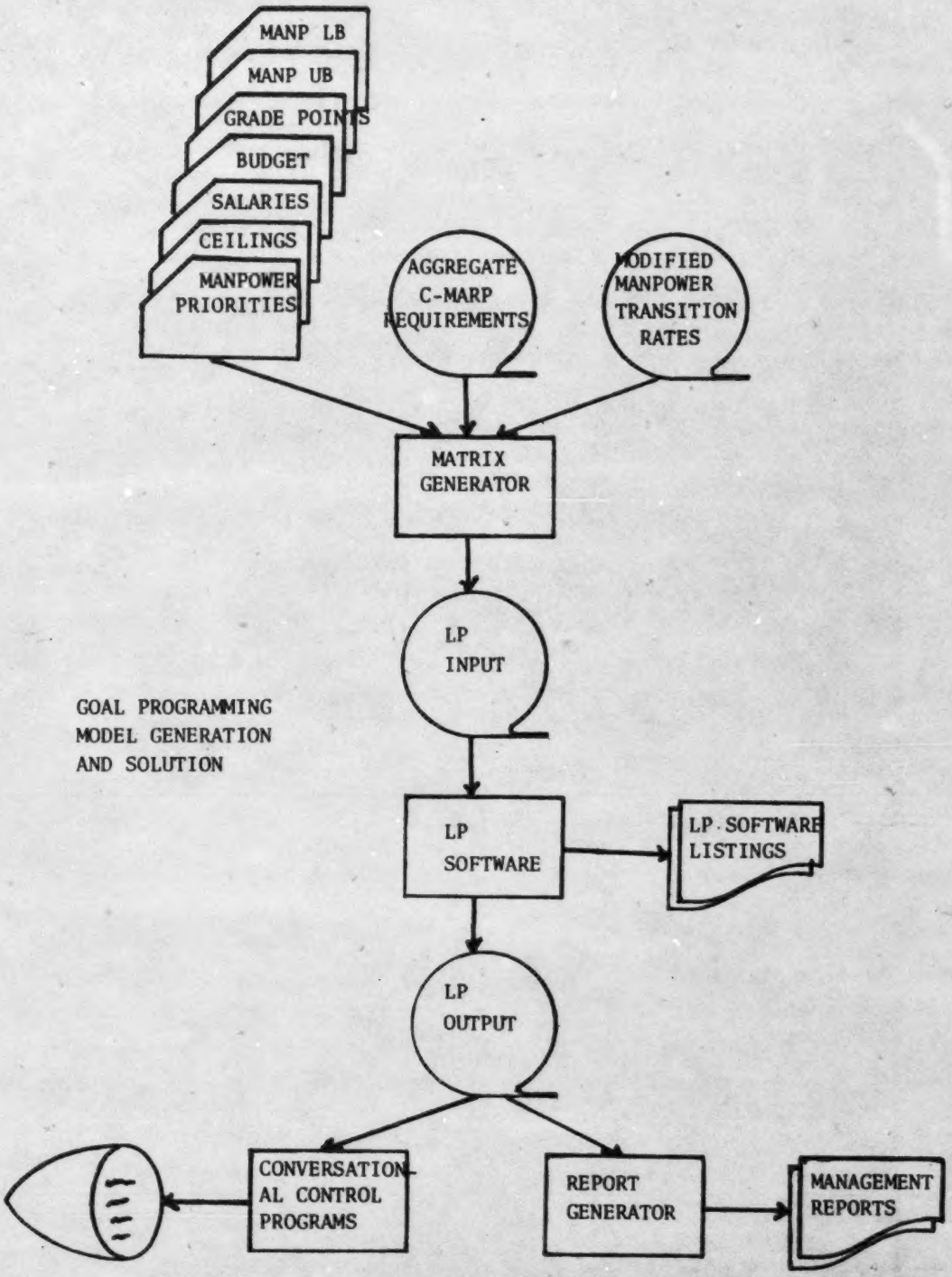


Figure 6

Newport. It is also currently in the process of being implemented for testing at NARF, Jacksonville. SAMPS, quite reasonably, appears most applicable for those areas of the shore establishment that have activities which are rich in civilian employees. These areas include particularly the Naval Material Command (NAVMAT) activities such as those in the Naval Sea Systems Command, the Naval Air Systems Command, the Naval Supply Systems Command, the Naval Facilities Engineering Command, and the Lab Programs. It is in these areas that there are so few military personnel that the most economical way in which to plan around them would seem to be on an aggregate through-put basis with alignments for incremental/decremental changes.

There are some areas of the shore establishment that have such a mix of military and civilian manpower so that each forms a significant proportion of the total. In these areas it is essential that military and civilian manpower planning be done in a fully integrated fashion. If a change occurs in one type of manpower it is necessary that a compensatory change in the other type occur if there is no change in total requirements or if there is a change in total requirements that a proper adjustment be made in each type of manpower. The need for interdependent planning exists to a high degree in areas such as the Naval Education and Training Command, the Bureau of Medicine and Surgery, the shore stations of the Atlantic and Pacific Fleet Commands, the Bureau of Naval Personnel, the Naval Reserve Command, and the Naval Telecommunications Command. It is in areas such as these that it would seem reasonable and cost-effective to plan and program using a single joint data base. In doing so, though, the planning and programming phases of the

workforce analysis and planning system would have to be constrained during the budgetary phase if the viability of major adjustments to the civilian workforce are to be taken into full consideration.

Another area which must be included in the integrated workforce analysis and planning system is equal employment opportunity planning. This is true for both the military and civilian manpower systems. As discussed in [6], "A realistic Equal Employment Opportunity (EEO) goals policy must consider the performance of the mission of the organization as well as social equality. Also, budgetary constraints, labor market availability and personnel progression rates are important. In a large decentralized Federal organization such as the Navy there is a Presidential and Congressional mandate requiring the achievement of EEO goals. In order to bring all of the above considerations together, the DON (Department of the Navy) is installing an EEO model and control system."

Implementation of realistic EEO goals policy requires extensive modeling and control system capabilities. Such capability, which will be incorporated in the SAMPS computer support system, would be able to use the civilian C-MARP aggregate requirements information in the manner displayed in Figure 7. Two types of manpower goals are needed for each planning period. The first are Workload Goals, via C-MARP, and the second are EEO goals. Priority weights are included to indicate the relative importance of meeting the workload and the EEO goals in terms of hiring and firing policies and short and long run objectives. The model functions within administratively determined controls, the current on-board population and the projected personnel movements within the organization. Additionally, the model information system will allow for periodic tracking of goal attainment. This is critical since it will allow

EEO MODEL SYSTEM

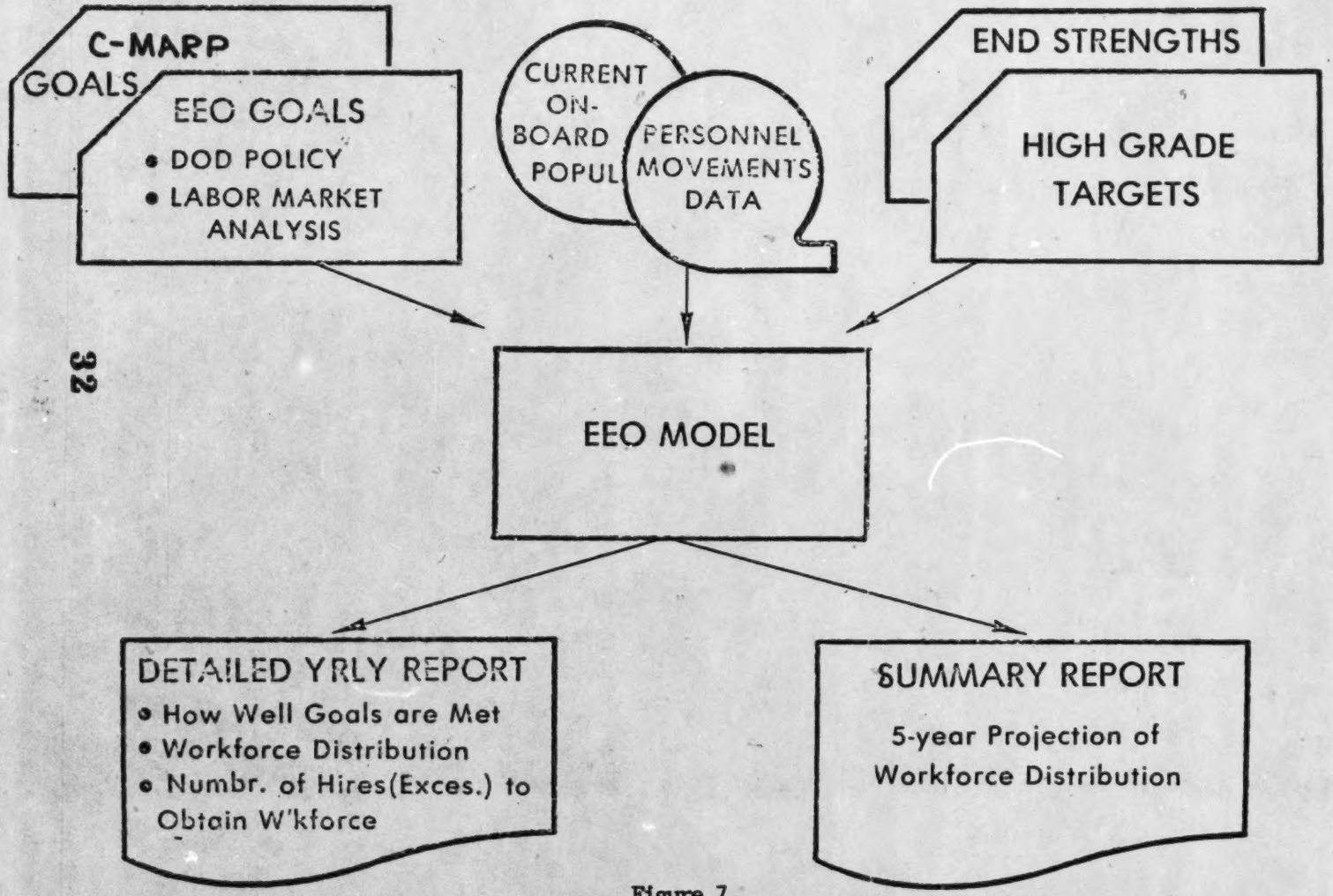


Figure 7

for the identification of problems impeding progress and the ability to take corrective action prior to the time frame for goal achievement. Such a system for both military and civilian personnel would place the Secretary of the Navy, Chief of Naval Operations, and the Director of Equal Employment Opportunity in an overall goal-setting, monitoring, and policy role.

It is also important to note that for civilians the Civil Service Commission (CSC) has required that all Federal agencies provide EEO reports utilizing data aggregations that are consistent with the CSC's PATCO (Professional, Administrative, Technical, Clerical, Other) occupational aggregation scheme as described in Federal Personnel Manual Letter No. 713-35. Therefore the Navy's civilian occupational aggregation scheme must necessarily conform with the PATCO scheme, as does the Computer-Assisted Manpower Analysis System (CAMAS) coding scheme given in [17]. These CAMAS codes are also being used in the SAMPS model studies.

If a joint military and civilian data-base is to be constructed, then the question of designing compatible coding schemes should certainly be addressed. Mission/function related codes, such as the billet occupation code (BOC) and the required functional capability (RFC), define vertical categories from which to plan a force from a functional perspective. They are an excellent device with which to aggregate information during the budget formulation and presentation phases of the PPBS. This also allows for aggregate-functional cross-comparisons. The Computer-Assisted Manpower Analysis System (CAMAS) coding scheme, on the other hand, defines horizontal categories along occupation/skill level lines. It is along these lines that one must analyze a workforce when they are investigating such things as EEO policy implementation in conjunction with workforce capabilities and mission

accomplishment. What is needed is a requirements projection system which combines the vertical and horizontal coding schemes into one system. This would allow the necessary cross-talk between the functional and occupational perspectives for the different uses which must be made of the requirements data.

Preliminary results of a study of compatibility between RFC/BOC and CAMAS codes from the Standards Implementation Document System (SIDS) performed by the Navy Manpower and Material Analysis Command, Pacific (NAVMMACPAC) indicate that aggregate level compatibility exists between the two coding schemes for civilian personnel. Samples of one of the outputs from this study are given as Figures 8 and 9. At a minimum, it appears that at the higher level aggregations the possibility exists of developing a coding scheme that employs a CAMAS-RFC/BOC cross-talk structure. These figures indicate that the civilian workforce can be analyzed in conjunction with the military workforce when the BOC/RFC coding scheme is used. The military workforce, though does not aggregate well within the CAMAS coding schemes. Since the CAMAS coding scheme has been designed to parallel the CSC PATCO scheme, which is directly relatable to U. S. Census occupation categories, it seems reasonable that military workforce occupation/skill level coding could be designed to fit this framework. See [14] for an earlier attempt. The implementation of CAMAS type coding for military would add an extra dimension to an integrated military and civilian workforce analysis and planning system. It would allow EEO goals policy analysis to be performed on the military workforce. It would make possible easier and more efficient assignment of civilians to military jobs in the shore establishment during mobilization. It would also have the added benefit of smoothing the transition of military personnel to civilian life when they retire from active

CORRELATION BETWEEN CODES IN CAMAS ORDER FOR 2-DIGIT CAMAS AGGREGATIONS

UIC - 00011 CHIEF OF NAVAL OPERATIONS HEADQUARTERS

CAMAS	RFC	BOC	MIL/CIV CLAIM	OFFICIER	ENLISTED	CIVILIANS	TOTAL
22---	MED05021	ND	11/11	0	0	1	1
24--	R&D01001	L2	11/11	0	0	1	1
	FAC02001	F7	11/11	0	0	6	6
	FAC08001	FM	11/11	0	0	1	1
	FLX07001	IH	11/11	0	0	10	10
	ICS07002	JJ	11/11	0	0	3	3
25---	FAC08015	FE	11/11	0	0	7	7
26---	ICS07000	7J	11/11	0	0	20	20
31---	INT01001	N2	11/11	0	0	15	15
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
89---	ICS08002	JN	11/11	0	0	8	8
	SUP02002	X8	11/	0	0	2	2
99---	FAC03001	FA	11/11	0	0	2	2
*99999	NO CODE			40	9	0	49
	ACM00001	AO	11/	2	0	0	2
	ADP00001	BO	11/	3	0	0	3
	ADP01001	B1	11/	0	1	0	1
	ADP02000	2B	11/	1	0	0	1
	ADP03000	3B	11/	1	1	0	2
	ADP04000	4B	11/	9	0	0	9
	COM00001	CO	11/	28	1	0	29
	COM04001	C4	11/	0	1	0	1
	COM05000	5C	11/	0	1	0	1
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.

*Dummy CAMAS Code for Non-CAMAS Equivalent On-board Military Personnel

Figure 8

CORRELATION BETWEEN CODES IN RFC/BOC ORDER FOR 2-DIGIT CAMAS AGGREGATIONS

UIC 00011 CHIEF OF NAVAL OPERATIONS HEADQUARTERS

CAMAS	RFC	BOC	MIL/CIV CLAIM	OFFICER	ENLISTED	CIVILIANS	TOTAL
*99999	NO CODE		11/	40	9	0	49
99999	ACM00001	AO	11/	2	0	0	2
99999	ADP00001	BO	11/	3	0	0	3
99999	ADP01001	B1	11/	0	1	0	1
99999	ADP02000	2B	11/	1	0	0	1
99999	ADP03001	3B	11/	1	1	0	2
49---	ADP04000	B4	11/11	0	1	1	2
99999	ADP04001	4B	11/	9	0	0	9
33---	ADP04001	B6	11/11	0	0	32	32
49---	COM00001	CO	11/11	0	0	2	2
59---	COM00001	CO	11/11	0	0	2	2
99999	COM00001	CO	11/	28	1	0	29
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.

*Dummy CAMAS Code for Non-CAMAS Equivalent On-board Military Personnel

Figure 9

service. Their skills attained in the Navy would be able to be directly relateable to the standard CSC occupation categories.

The type of system that is to be devised for workforce analysis and planning should be capable of best dealing with the labor force for which it is responsible. It should take into consideration the costs involved in drastically altering the established method of performing workforce analysis and planning. One of the prime advantages of implementing SAMPS in areas of the shore establishment that are largely manned by civilians is that it would allow much of the management and coordination of the shore support effort to remain in the hands of the major claimant, sub-claimant, and activity management. In this manner the Navy can take full advantage of multi-level management expertise in civilian budget coordination and formulation, along with line-managements more direct ability to implement hirings, firings and employment of temporary personnel. It would also allow for the separation of planning and programming from budget allocation and control expertise, while functioning within an integrated workforce analysis and planning system that would be requirements/standards driven and capable of rapid and coordinated response throughout.

The advantages to the Navy would be an integrated and interactive system, within the basic framework of the NAMPS, that utilized common coding schemes and a standardized method of requirements generation where possible. The full benefits of such a system should be reflected in a clearer and more concise presentation of Navy manpower needs as part of the Navy budget as presented to Congress. Additional benefits should accrue from integrated workforce analysis and planning along occupational/skill level as well as functional lines, as in the ADSTAP/SHORSTAMPS interface. This could be done

in such a way that SAMPS and SHORSTAMPS would complement each other for shore-related activities by using each system's primary capability to strengthen shore-related total workforce analysis and planning.

SOME SUGGESTIONS FOR LONG RANGE RESEARCH AND DEVELOPMENT

It would prove valuable to examine the possibilities available for integrated management of the military and civilian workforce analysis and planning systems, making maximum use of their complementary flexibility, with special emphasis on the effects of centralization and decentralization, to improve the total workforce analysis and planning process. A specific long range research project [1] is being established to address these issues. Such a research study should clearly indicate the constitutional, statutory, executive, administrative, and operational limits to the integration of these processes.

It would seem useful to investigate the possibility of devising methods whereby the Navy could directly relate the impact of operational force adjustments on the manpower requirements of the support establishment. The Navy could also improve upon the projected impact of weapon systems development of future manpower requirements and the training process necessary to supply the requisite skills. In fact, the Navy should develop the area of skills and skill level workforce planning capabilities for the shore establishment, as well as for the operational forces. This would entail the development and utilization of a skills inventory which could serve as a basis for implementing organizational design and staffing systems for the shore establishment. Specifically, the Navy should work toward improving its projection and control of personnel, selection, recruitment, classification, assignment, retention, promotion, and retraining parameters.

The Navy should certainly consider developing and extending Equal Employment Opportunities planning, evaluation, and control systems. This could be pursued in tandem with research attempting to link the Navy's internal manpower

demands and personnel supply projection capabilities to the external or National labor market situation.

At the level of systems design research, interactive or conversational decision systems will have reached a high level of sophistication by 1980. Some form of models for multi-level aggregate skills planning should be in place at many sites. Also, computer hardware for distributed processing should be readily available at many sites. The Navy should pursue conversational modeling research which could emphasize computer analysis of requested inputs to allow the computation of additional decision alternatives without user intervention. This seems particularly applicable for aggregate skills planning models and some form of organizational design or staffing analysis. The line of questions by the user would provide the stimulus to the computer for performing computations. In this case, research should emphasize ways the computer might prompt the user to provide a full consideration of possible alternatives. Another important area will be the issues of interactive distributed analysis. What should be investigated here is the best balance of decision-makers and analysts, models, and computers geographically and organizationally.

In addition to establishing an interactive system to satisfy Navy management, consideration should also be made to allow the individual employee to query this system to see what kinds of careers he might pursue. This application would be particularly useful to officers, senior enlisted, and professional civilians.

At the data-base and data collection level it would seem valuable to research the possibility of developing system's incentives at the information-source input-level to induce data-base reliability and updatedness.

The Navy should approach research in the area of integrated military and civilian workforce analysis and planning with the goal of making significant and appropriate progress. In this area of fundamental concern, care should be taken to delineate not only what is needed, but also what is available and how best to combine it.

APPENDIX I

THE NAVY'S METHODS OF MANPOWER PLANNING AND PROGRAMMING*

The Navy's methods of manpower planning and programming are being changed as discussed in [11]. This appendix discusses the existing system which is being modified to incorporate these changes. This is followed by a brief description of the Phase I changes which are being made.

Basic overall guidance for the manpower planning and programming process derives from the following documents: the Joint Intelligence Estimates for Planning (JIEP) which contains long-range intelligence data; the Navy Strategic Study which contains long-range general mission and tasking estimates for the Navy; the Joint Long Range Strategic Studies (JLRSS) which contains general mission and tasking estimates for each of the Armed Services; the Joint Strategic Objectives Plan (JSOP) which contains strategy and force planning beginning with the program year; the Navy Long Range Objectives (LRO) which contains estimates of the Navy force structure beyond the program year; the Strategic Guidance Memorandum (SGM) which elaborates upon the JSOP; the Joint Research and Development Objectives Document (JRDOD) which contains long-range research and development objectives based upon JSOP, JLRSS, and JIEP guidance; and the Defense Guidance, SECNAV Planning and Programming Guidance and CNO Policy and Planning Guidance which are the culmination of the overall strategic and force level planning process. The Tentative Planning and Programming Guidance (TPPGM) then specifies tentative Total Obligation Authority (TOA), for the Five Year Defense Program (FYDP) for the seven major mission and support categories. After service comment, the

*Much of this material was drawn from [19].

TPPGM is issued in final form as the Planning and Programming Guidance Memorandum (PPGM).

Within the framework of total workforce analysis and planning, the Program Objectives Memorandum (POM) is the most important single decision point in determining the Navy's requirements and force structure. The POM is the SECNAV's annual recommendation to the SECDEF for the detailed application of all resources within the Department of the Navy. Although it contains some fiscally unconstrained estimates beyond the FYDP, the POM data are developed within the constraints of the PPGM developed for the Navy by the SECDEF, as interpreted by the Chief of Naval Operation's Program and Fiscal Guidance (CPFG). Thus, the POM is the document by which programming under fiscal constraints is conducted.

The military manpower planning process centers around the POM. In the Navy, OP-90 (General Planning and Programming Division of the Navy Program Planning Office) with assistance from OP-01 (Deputy Chief of Naval Operations (Manpower)) develops the portions of the POM relating to military manpower based upon fiscal and logistic constraints imposed by SECDEF, mission sponsor's development of initial POM requirements, military manpower needs and costs estimated by activities for the PPBS programming horizon, major claimants' approval and/or modifications of the activities' estimates for the PPBS programming horizon, and the major claimants' estimates of military manpower needs and costs for the FYDP. Major policy and program changes are generated in the Manpower, Personnel and Training Chief of Naval Operations' Program Analysis Memorandum (CPAM).

Based upon review of the POM, the SECDEF issues Program Decision Memoranda (PDM's) which indicate the approved military manpower levels for each mission and support category for the FYDP. After any changes are made due

to the "reclama" process, the approved manpower levels are entered in the FYDP and in the Department of the Navy Five Year Program (DNFYP).

OP-100 (Manpower Authorizations and Allocations Branch) then develops the Peacetime Manpower Allocation/Requirements Plan (P-MARP). The P-MARP consists of the allocation of approved military manpower levels in the DNFYP among the various activities including specific qualitative requirements. OP-100 then authorizes activities to have billets which correspond to P-MARP specifications.

Within-year reprogramming can occur without SECDEF involvement if activities can specify compensatory billets which can be given up to obtain new requested billets. This manpower shift request would be sent to the major claimant for review and, if approved, it would then be sent to OP-100 for further review. If approved at this level, then the P-MARP is updated, and a new manpower authorization is issued.

If the request by the activity requires an increase in Total Obligation Authority (TOA), a transfer of funds from one appropriation to another, or an increase in the approved military manpower levels in the DNFYP, the requested manpower change will result in the preparation of a Program Change Request (PCR). The PCR is reviewed and possibly modified at a number of levels before it is forwarded to SECDEF. Then the SECDEF issues a PDM, either approving, modifying, or rejecting the proposed change. If the PDM results in any changes in currently approved manpower levels, then all of the programming documents are updated and new authorizations are issued.

Concurrently, OP-101 (Mobilization Manpower Requirements Branch) develops an M-MARP (Mobilization Manpower Allocation/Requirements Plan). The M-MARP shows, by activity, the increase in manpower requirements above the P-MARP

that would occur immediately upon mobilization and throughout the following year.

The civilian manpower process is different. In regard to the civilian manpower planning process, budget formulation plays a much more central role. As in the case of military manpower planning, OP-90, with assistance from OCMM-05, develops the civilian manpower portion of the POM. The civilian manpower portion of the POM is based upon fiscal and logistic constraints imposed by SECDEF, civilian manpower needs estimated by activities and based upon estimates of workloads to be received from various "customers", and major claimants' approval and/or modification of the activities' estimates for the PPBS programming horizon; the civilian portion is further based upon "customer-related" workloads. After review of the POM's, SECDEF issues PDM's indicating the approved civilian manpower levels for each mission and support category for the FYDP. These adjustments are included in the OSD/OMB budget submission and October FYDP update.

The FYDP reflects civilian manpower by claimant, program element, and unit identification code. OCMM (Office of Civilian Manpower Management)/OP-92P (Assistant for Civilian Manpower Management in the Fiscal Management Division of the Program Planning Office) then allocates on an aggregate basis to major claimants for FYDP updates. The major claimants then allocate approved civilian manpower strengths, on an aggregate basis, to the sub-claimants, activities, and unit identification codes under their jurisdiction. The values distributed are the expected civilian manpower control points for each of the years covered in the DNFYP. Clearly, this is a very cyclic process and subsequent annual PPB submissions may modify any or all of these numbers for the years beyond the next fiscal year. For activity management planning purposes, these allocations by the major claimants are the best estimates, by

program element, of the civilian numbers the activity will have to work with.

Based upon the approved civilian manpower allocation for the next fiscal year and upon the estimated "customer-related" workload, the individual activities develop detailed budgets and estimates of needed civilian manpower for the next fiscal year. Major claimants collaborate with the activities to develop an appropriations budget for the sub-claimants and activities under their jurisdiction and estimate civilian manpower needs by funding category. The estimated civilian manpower requirements per major claimant are combined from the individual estimates and the civilian manpower portion of the budget request for the entire Navy is formulated. Unlike centrally developed standards/requirements based budget information, this process, being developed from an activity basis with major claimant submissions coordinated at headquarters, causes a problem in terms of presentation of detailed information, but also much more closely approaches a viable plan.

The Navy's budget request is then incorporated into the DOD (Department of Defense) total and submitted to the Congress, where it is modified and eventually approved. Modifications during this phase must be answered within a very short time frame. The approved budget is then executed by NAVCOMPT, and funds are allocated to the major claimants.

Based upon the programs authorized in the DNFYP and the amount of money apportioned to the major claimants to carry out these programs, OCMM distributes overall manpower ceiling points to each of the major claimants to carry out those programs in accordance with the amount of money apportioned to each major claimant. This process demands a high degree of coordination and interaction between OCMM and OP-92 to assure that dollars and ceiling flow appropriately.

Reprogramming also occurs during the execution fiscal year on the civilian side. Activities continually evaluate their "customer-related" workloads and if they determine that their current ceiling will not be high enough to cope with the workload, they may request a ceiling change.

If a change necessitates an increase in TOA, a transfer of funds from one appropriation to another, or an increase in approved civilian manpower levels in the DNFYP, then a PCR would be prepared.

If a PCR is not necessary, reprogramming would be initiated by the activity requesting that the major claimant increase its ceiling. If the major claimant approves the request and can find a "compensatory" activity, the major claimant will reallocate the ceiling points accordingly. If this reallocation cannot occur at the major claimant level, the major claimant may request OCMM to increase the ceiling point total of the major claimant. This is also accomplished in a compensatory manner between the activities of different major claimants.

The above system is currently being altered to improve the management of Navy manpower resources and to achieve closer coordination of the military and civilian management functions. The Secretary of the Navy and the Chief of Naval Operations have approved a plan to consolidate the military/civilian manpower planning and programming function in the Office of the Deputy Chief of Naval Operations (Manpower) (OP-01). Phase I of this plan was implemented by [11] which includes:

> "... an integrated planning and programming system for the POM-79 budget submit with a more complete execution for the POM-80 budget submit. The SHORSTAMPS program [18], as it becomes operational, will provide the vehicle for determining manpower requirements. Pending the full implementation of SHORSTAMPS, A civilian requirement data base will be established utilizing information systems currently in existence. As SHORSTAMPS is expanded, these civilian

requirements will be substantiated and updated. Within the SHORSTAMPS program, manpower will be specified as military billets, civilian positions, or manpower spaces that are interchangeable between the two. This will provide an improved basis for claimants and sponsors to develop and justify a more precise total manpower requirement based on operational needs. If these requirements are not approved, the Navy will be in a better position to identify to Congress which capabilities will have to be eliminated or reduced...
... The phase presently being implemented includes only the integration of planning and programming functions for active military and civilian personnel, and does not include contract manpower or naval reserve manpower. While this is only the first phase, it is a significant step forward in the total manpower structure of the Navy. The Director Navy Program Planning (OP-090) will continue to monitor all manpower requirements during the POM, and will retain full responsibility for CIVPERS budgeting, allocation, and control to the claimant level. The advisability of further centralization of manpower management, by including civilian manpower in military manpower authorizations assigned directly to individual activities will be considered by a flag officer policy board...

APPENDIX II

NAVY MILITARY PERSONNEL PLANNING SYSTEMS

The U. S. Navy's Bureau of Naval Personnel (BUPERS) system that has been established to perform the personnel inventory modeling for enlisted Navy personnel is the Advancement, Strength, and Training Planning Program (ADSTAP) A system's conceptualization is given in Figure A. This system cont Personnel Inventory Analysis, Inputs Required, Training Required, ar sses Required Models as well as a total enlisted Military Pay Navy (MPN) budget cost model of the Navy Manpower Planning System (NAMPS). As a part of the POM-77 Manpower Resources Coordination Panel's (MRCP's) recognition that the manpower analyses before they are programmed as requirements, the ADSTAP system is to be utilized to determine whether new requirements can be satisfied by the personnel system given the present inventory projected by length of service into the future.

Manpower requirements for enlisted personnel are developed by pay grade and military skill by the Office of the Chief of Naval Operations. They represent the number and qualifications of personnel required to complete the Navy mission.

At the manpower/personnel interface the personnel system performs workforce analysis and planning in the areas of organization design and structure, feasibility of attainment of manpower requirements related to program planning, and manpower demand and personnel inventory supply relationship. In performing demand/supply analysis, manpower requirements are specified as directives and the personnel system attempts to supply the requisite personnel within the constraints of time, available resources, authorizations, and budgets. It is

ENLISTED FORCE MANAGEMENT SYSTEM

ADSTAP

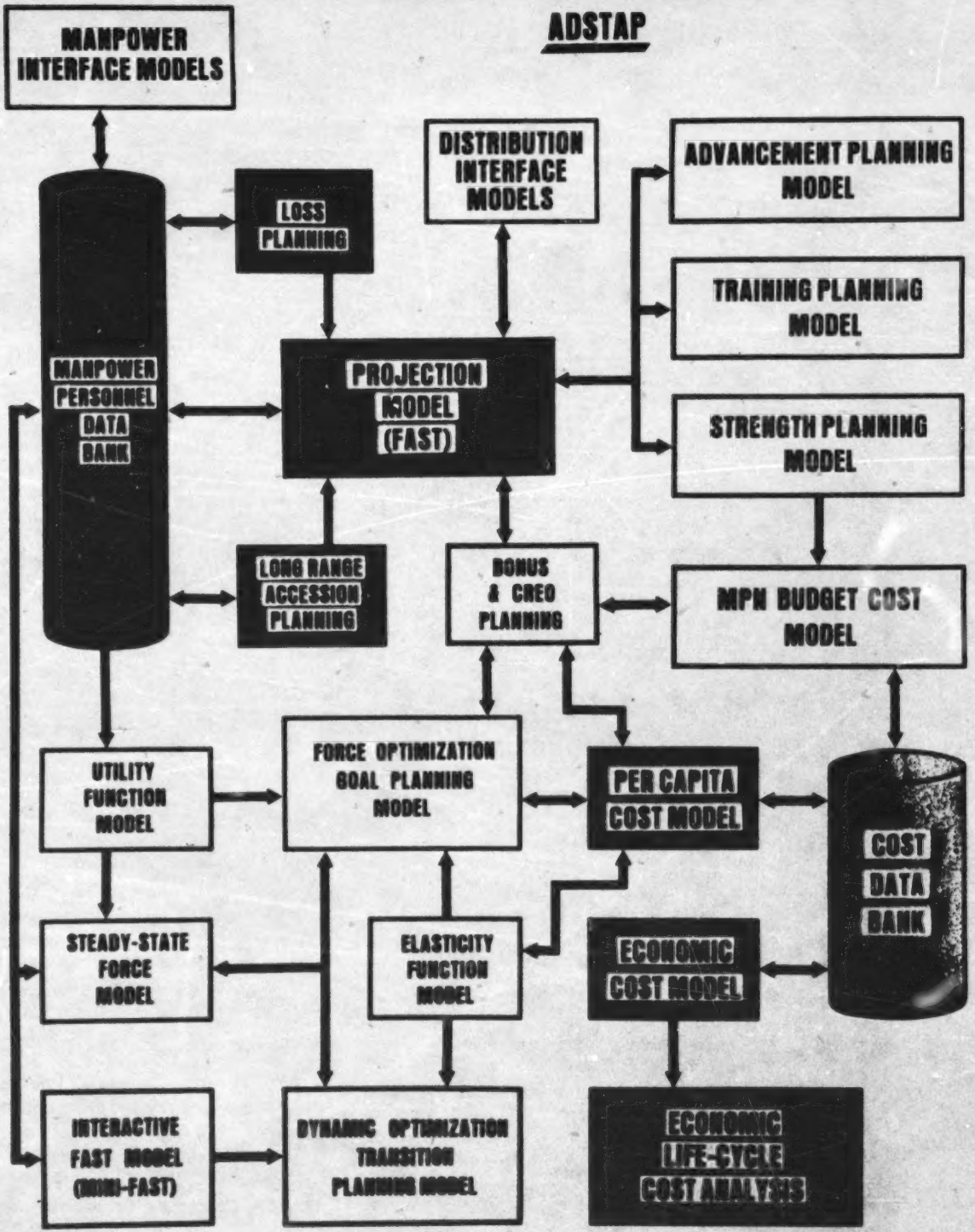


Figure A

recognized that requirements that are unconstrained by people and by money available may result in pie-in-the-sky. Therefore, the Navy searches for a compromise between directed requirements and facilitation of personnel flows in structuring feasible requirements.

Current force projections for policy assessment are made by the ADSTAP Master System. Force management is a line-management function performed with full knowledge of imposed constraints and having the purpose of providing the required skilled personnel to the operating forces. Force management revolves around strength and advance planning for which the primary computer subsystems are the Strength Planning Model (SPAN), the Loss Planning Subsystem, the Advancement Planning Subsystem (ADIN), and the main projection model (FAST). Training planning is also very important in regard to enlisted workforce analysis and planning, since the military labor market is required, in most cases, to "grow their own" experienced personnel to fill skill requirements. The ADSTAP system relies on the mixture of a free standing system (STAPLAN) for entry level training and the advanced rating School Training Input Requirements System (CISTIRS) to assist training managers and BUPERS distributors. These subsystems and others, including a "calculational methodology" for projecting transition rates in conjunction with ideal force related transition rate goals, are discussed in more detail in an Office of the Secretary of the Navy Memorandum for the Assistant Secretary of Defense (Manpower and Reserve Affairs) on the Enlisted Personnel Management System, 19 August 1975.[2]

Authorization management and distribution concerns for enlisted personnel is initiated by the manning control authorities of Atlantic Fleet, the Pacific Fleet, and BUPERS. They develop functional priority lists that are used by

the Enlisted Personnel Management Center (EPMAC) to develop a short-range, seven month, billet by billet priority listing for requisition by detailers.

The BUPERS officer workforce analysis and planning system includes, as a basic framework, a strength planning model, a promotion planning model, and an officer distribution model. The strength planning model is interactive. It is used to produce change data for the planned inventory of officers necessary to attain requirements obtained from the Officer Requirements Plan (ORP). In addition to file updating, the model can be used to prepare comparative reports displaying requirements and inventory data by skill level. The promotion planning model is similarly interactive. It is used for determining the impacts of alternative promotion policy parameters on the projected workforce, by fiscal year, in terms of skill designator, pay grade, and year groups.

The officer distribution model uses goal programming to determine "effective distribution", in terms of both quality and quantity, for the personnel requirements of every authorized billet. Promotions, transfers and eliminations (or attrition) along with tests and validations from actual experience as well as more formal devices (such as training and examinations) are accommodated in the model's decision-assisting framework. Currently, the model, like the classical assignment model, is static in that it deals with only one rotation at a time. But, research is underway to make it dynamic and thus allow the "personal touch" that is required by the BUPERS' "Officer Distribution Manual" to be incorporated via consideration of individual career paths in relation to the mission needs of the Navy. This model is viewed most correctly as a "resource-allocation" rather than an ordinary "assignment-type" model.[1/]

[1/] A further discussion of this model can be found in Cass, Charnes, Cooper, and Niehaus, Naval Research Logistics Quarterly (submitted).

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One important reason for investigating methods of integrated military and civilian workforce analysis and planning processing in the Navy is to be able to manage the entire workforce. The first subject addressed in this paper is the fundamental differences between the Navy's military and civilian workforce analysis and planning systems. The discussion centers around the characteristic differences in the workforces, for management of which each system had come to be established. Then, a number of alternatives for integrating these systems are discussed with a particular regard for taking full advantage of the complementary characteristics of each system. Special attention is paid to the interrelationships of the manpower requirements generating and personnel inventory analysis systems for the Naval shore establishment where military and civilian personnel work together. A further objective is to present some suggestions for long range research and development, so as to point to areas in which optimal systems design can be pursued.